1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

m

8

"The Chromium Plating of Cast Iron. I. Ya. [illegible] (Vestn. Metalloprom., Met. Ind. Herald), 1935, (1), 74-80; C. Abs., 1935, 29, 7208). —(In Russian.) The three cast irons used had the compositions: (1) carbon 3·4, silicon 1·2, manganese 0·4, sulphur 0·10, phosphorus 0·15, chromium 0·02%; (2) carbon 3·36, silicon 2·42, manganese 0·58, sulphur 0·104, phosphorus 0·38%; (3) carbon 3·02, silicon 2·08, sulphur 0·141, phosphorus 0·50%. The samples were slowly heated (20 hrs.) to 900° C., held at this temperature for 10 hrs., cooled to 750°-700° C. during 3 hrs., and finally cooled to room temperature during 22 hrs. The electrolytic bath contained CrO_3 250 and H_2SO_4 2·5 grm./litre. The anodes were of lead, 10 × 3·5 cm., spaced 6 cm. from the cathode. Plating of (1) was carried out at a c.d. (amp./dm.²) of 5 at 25°, 15 and 25 at 45°, 35 and 45 at 55°, and 55 at 65° C. In the case of (2) and (3), plating was done at 5, 15, 25, 35, 45, and 55 amp./dm.², each at 45° and 55° C. Plating was continued for 1½ hrs. in every case. Of all methods of surface treatment, mechanical polishing gave the best results. The optimum c.d. and temperature were 25 amp./dm.² and 45° C. Current efficiency increased with c.d. and decreased with rise in temperature.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

[redacted]

PROCESSES AND PROPERTIES INDEX

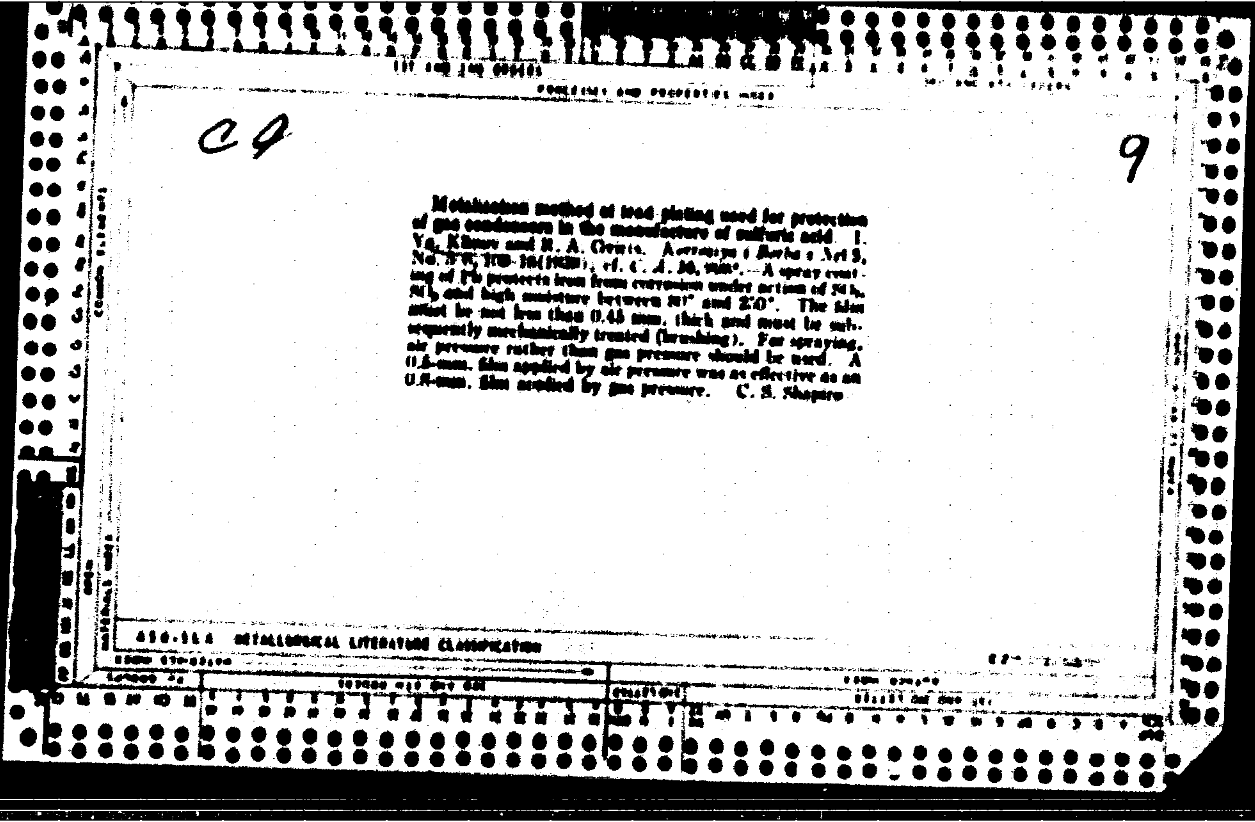
C4

9

Protection of iron from corrosion by coating with rust-proof steel. I. Ya. Klinov. *Korroziya i Bor'ba s Nei* 3, No. 1-2, [illegible]([illegible]).—Iron and carbon steel were coated with rustproof steel by spraying or by elec. methods. In spraying, the film was least porous when the flame was produced by C_2H_2 and O at equal pressures. Excess of O always gave an unsatisfactory film. A reducing flame (excess C_2H_2) gave satisfactory results. Porosity is decreased by decreasing the distance between the nozzle of the metallizer and the surface to be coated, by increasing the pressure of gas producing the spray, and by spraying with an inert gas, such as N. Spraying with the use of a neutral or a reducing flame and electrodeposition give equally good protective films. C. S. Shapiro

[redacted]

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

C9

9

Metallization method of lead plating used for protection of gas condensers in the manufacture of sulfuric acid. I. Ya. Klinov and N. A. Genis. *Korroziya i Bor'ba s Nei* 3, No. 3-4, 110-16(1938); cf. *C. A.* 30, [illegible]. —A spray coating of Pb protects iron from corrosion under action of SO_3, SO_2 and high moisture between 80° and 250°. The film must be not less than 0.45 mm. thick and must be subsequently mechanically treated (brushing). For spraying, air pressure rather than gas pressure should be used. A 0.5-mm. film applied by air pressure was as effective as an 0.8-mm. film applied by gas pressure. C. S. Shapiro

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

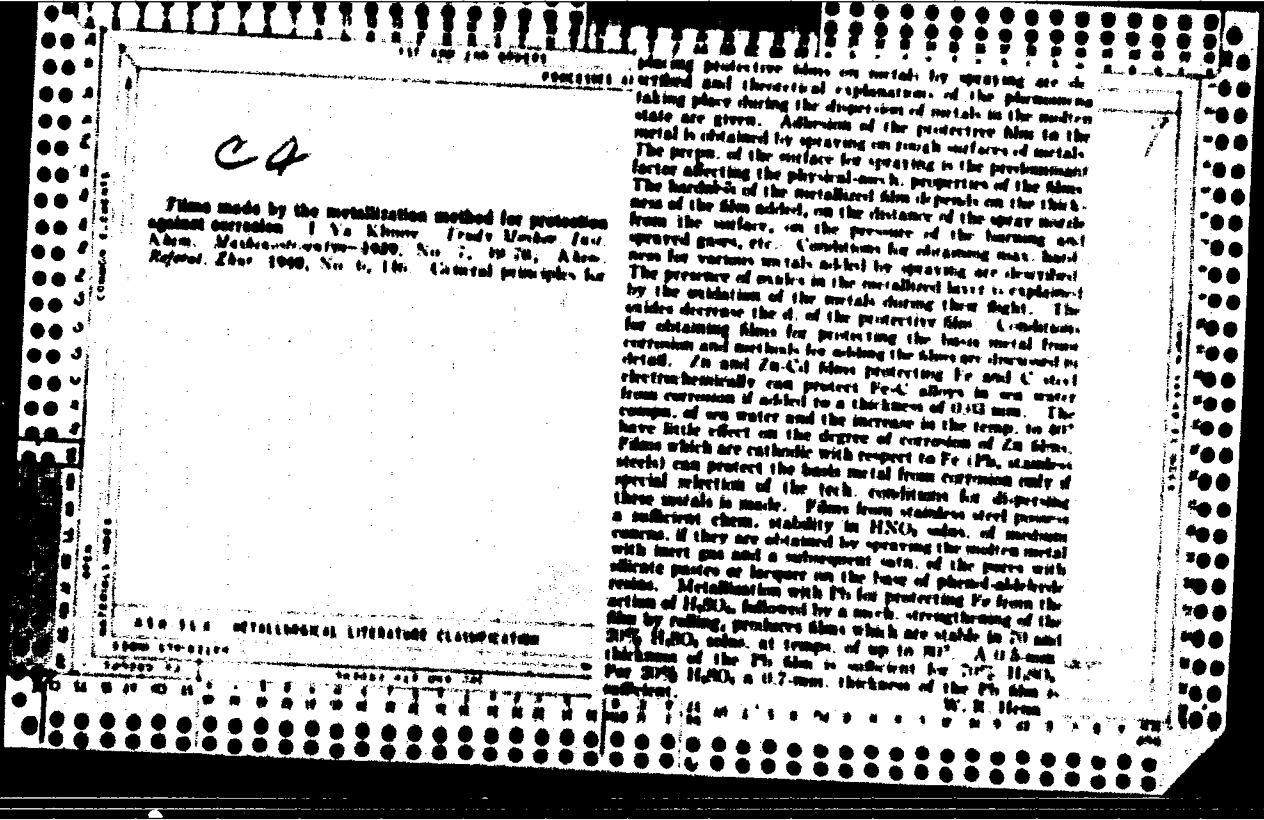
PROCESSES AND PROPERTIES INDEX

M

7

*Lead Spray Coating for the Protection of Chemical Apparatus Against Corrosion. I. Ye. Klimov and N. A. Ilverts (Prom. Org. Khim., 1939, 6, 151-154; Chem. Zentr., 1941, 112, (I), 3000). [In Russian.] Investigations have been made on the protective effect of sprayed lead coatings, in relation to the following factors: thickness of the coating, temperature and concentration of the corrosive solution, method of mechanical finishing of the coatings, and the tendency to oxidation of the sprayed metal particles.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



C4

Films made by the metallization method for protection against corrosion. I. Ya. Klinov. *Trudy Moskov. Inst. Khim. Mashinostroeniya* 1939, No. 7, 19-30; *Khim. Referat. Zhur.* 1940, No. 6, 116. General principles for placing protective films on metals by spraying are described and theoretical explanations of the phenomena taking place during the dispersion of metals in the molten state are given. Adhesion of the protective film to the metal is obtained by spraying on rough surfaces of metals. The prepn. of the surface for spraying is the predominant factor affecting the physical-mech. properties of the films. The hardness of the metallized film depends on the thickness of the film added, on the distance of the spray nozzle from the surface, on the pressure of the burning and sprayed gases, etc. Conditions for obtaining max. hardness for various metals added by spraying are described. The presence of oxides in the metallized layer is explained by the oxidation of the metals during their flight. The oxides decrease the d. of the protective film. Conditions for obtaining films for protecting the base metal from corrosion and methods for adding the films are discussed in detail. Zn and Zn-Cd films protecting Fe and C steel electrochemically can protect Fe-C alloys in sea water from corrosion if added to a thickness of 0.03 mm. The compn. of sea water and the increase in the temp. to 40° have little effect on the degree of corrosion of Zn films. Films which are cathodic with respect to Fe (Pb, stainless steels) can protect the basic metal from corrosion only if special selection of the tech. conditions for dispersing these metals is made. Films from stainless steel possess a sufficient chem. stability in HNO_3 solns. of medium concns. if they are obtained by spraying the molten metal with inert gas and a subsequent satn. of the pores with silicate pastes or lacquer on the base of phenol-aldehyde resins. Metallization with Pb for protecting Fe from the action of H_2SO_4, followed by a mech. strengthening of the film by rolling, produces films which are stable in 50 and 20% H_2SO_4 solns. at temps. of up to 80°. A 0.5-mm. thickness of the Pb film is sufficient for 50% H_2SO_4. For 20% H_2SO_4 a 0.7-mm. thickness of the Pb film is sufficient.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

9

The effect of vacuum on the corrosion of metals (A preliminary report). I. Ya. Klinov and P. Pikrev. *Trudy Moskov. Inst. Khim. Mashinostroeniya* 1959, No. 7, 1[illegible]12; *Khim. Referat. Zhur.* 1960, No. 6, 112.—K. and P. investigated the effect of vacuum on the corrosion of C steel, Armco Fe, Al, Pb and Cu in acid media. The corrosion phenomena of these metals were studied in relation to processes taking place with the evoln. of H and accompanied by the depolarization by O. O has no appreciable effect on the corrosion of the 1st type under vacuum conditions. The change in the soly. in this case is caused only by the reduction of the pressure, the corrosion decreasing with an increase of the vacuum. The effect of the vacuum is considerable at 100-50 mm. pressures. At 20-30 mm. the soly decreases by 16-30%. Corrosion taking place in the presence of O as depolarizer depends on the concn. of O. At reduced pressures O is removed from the reaction medium and the soln. of the metal decreases. Expts. carried out in the air and in N indicate that if the air is not forced out preliminarily with N the vacuum becomes a factor which decreases the concn. of O in the reacting medium and its effect on the corrosion is analogous to that of N. The application of vacuum in the system in which air is replaced by N produces a further decrease in the velocity of soln., although it is considerably smaller than in the corrosion process taking place with the evolution of H. K. and P. conclude that: (1) Reduced pressure is an independent factor which decreases corrosion. (2) The greater the vacuum the greater the decrease in the velocity of soln. of the metal. (3) For corrosion taking place with the polarization by O the main effect of the vacuum is confined to the decrease in the concn. of O.

W. R. Henn

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

M

7

"Determination of the Porosity of Coatings Prepared by Metal Spraying. I. Ya. Klinov (Zavod. Lab., 1939, 8, 183-186; Chem. Zentr., 1941, 112, (I), 964).—K. determined the porosity of metal coatings by the method of Schroh, i.e., by determination of the coeff. of permeability (?), from the time required by 1 litre of air to pass through 1 cm.² at 18° C. and 1 atmosphere pressure. Investigations have been made to determine the relation of the coeff. (?) to the distance of the surface to be coated from the spraying nozzle, the thickness of the coating, and the spraying pressure.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

PROCESSES AND PROPERTIES INDEX

9

Chemical stability of austenitic cast irons in hydrochloric acid. I. Ya. Klinov. *Khim. Mashinostroenie* 1939, No. 9, 22-4.—The anticorrosive properties of ordinary Ni-resist, Ni-resist with low C content (2.0%) and Nichrosilal cast irons having chiefly a structure of austenite and cementite were tested in 5, 10, 20 and 37.3% HCl concns. at room temp. and at 70°. The tensile strengths of both Ni-resist specimens were 18.7 kg./sq. mm. and of the Nichrosilal 20.2 kg./sq. mm. Brinell hardness of Ni-resist was 180 and of Nichrosilal 143. For comparison ordinary gray cast iron was tested under identical conditions. The wt. losses were detd. after 72, 120, 240, 360 and 720 hrs. Ni-resist is sufficiently resistant at 20° in acid concns. not over 20%. On decrease of the C content the resistance increases owing to the smaller no. of carbide inclusions in the solid soln. The Ni-resist showed no tendency toward graphitization, while the gray cast iron showed a tendency to graphitize with a loss of 80% of the wt. Nichrosilal had a smaller resistance than Ni-resist and even at room temp. in 10% acid concn. its wt. loss was 1 g./sq. mm. per hr. However, its soln. ceased after 5 days owing to the formation of protective films.

B. Z. Kamich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

CA

1

Nonmetallic materials for chemical apparatus. V. E. [illegible] and L. Ya. [illegible]. *Khim. Mashinostroenie* 1940, No. 4-5, 31-[illegible].—A brief review is given on the progress made in the Soviet Union during the last 10 yrs. in the development and use of nonmetallic materials for chem. app. The topics include acid-resistant ceramics, diabase, fused quartz, glass, cements, cements with water glass, S cements, bituminous mastics, rubber coatings, plastics, enamels and wood. Fifteen references. B. Z. Kamich

410.11A METALLURGICAL LITERATURE CLASSIFICATION

C 4

1

PROCESSES AND PROPERTIES INDEX

Chemical stability of silicon-molybdenum cast iron manufactured in U. S. S. R. I. Ya. Klinov. *Korroziya i Borba s Nei* 6, No. 1, 21-4(1940).—A cast iron contg. C 0.77, Si 14.1, Mn 0.20, P 0.41, Cr 0.17 and Mo 3.20 or 6.0% was tested for resistance to (1) 4.3% SO_2 at 140-130° and 6 atm., (2) 15% HCl at 180° and 16 atm., (3) 1-10% HCl, with Cl_2 added, at 60°, (4) 18% HCl at 90°, (5) H_3PO_4 and HCl mixt. with conc. of 28% P_2O_5 and 0.7% HCl at 60°, (6) satd. soln. of $Pb(OAc)_2$ at 80-90°, (7) satd. soln. of $Al_2(SO_4)_3$ at 90°, (8) $Al(OAc)_3$ at 20°, (9) salt of Berthollet (30% soln.) at 70°, (10) I vapor at 160-170°. In HCl this alloy can be used only under 90° when the Mo content is 3.2%; with 6% Mo the loss in 18% acid at 90° decreases from 0.8 to 0.2 g./sq. m./hr. after 20 hrs. and reaches a const. value of 0.2 g. after 120-140 hrs. of action (passivation). Presence of free Cl in HCl acts destructively. The salt solns. tested give no traces of corrosion. H_3PO_4 with 0.7% HCl gives practically no corrosion; the resistance is due to the presence of Mo. In SO_2 the loss is 14 g./sq. m./hr. in the first 20 hrs. Then a protective film is evidently formed as the loss drops to 0.1 g. and remains const. for 200 hrs. The iodine vapor at 178° causes a loss of 0.8 g./sq. m./hr. C. S. S.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

Ca

10

Corrosion of metals in the production of certain organic compounds. I. Ya. Klinov. *Org. Chem. Ind.* (U. S. S. R.) 7, 48-9(1940).—The chem. resistance of electrolytic Cu and 2 kinds of Cr-Ni steel (1 contg. 0.60% Ti) in the production of PhOH-CH_2O resins was tested by heating metal plates at 100 ± 5° for 200 hrs. in mixts. of PhOH and 96% H_2SO_4, PhOH and concd. HCl, CH_2O (37%) and HCl and CH_2O and NaOH. Cu was strongly attacked by all the mixts. except CH_2O + NaOH. The steels were affected a little in the initial stages by PhOH + H_2SO_4, and PhOH + HCl and somewhat more by CH_2O + HCl. The steel contg. Ti is more resistant. In the production of [illegible] the corrosion of Cu and steels increased with increasing temp. (100-80°) in nearly the same degree. In the prepn. of EtCl, with initial concn. of 12-13% HCl in the reaction mixt., Cr-Ni-Mo steels showed poor resistance at 95°; Si-Mo cast iron with 3.0% Mo showed a loss of 0.0 g./sq. m./hr. after the exposure for 200 hrs., and the product with 6% Mo lost 0.22 g./sq. m./hr. Several grades of chrome and Cr-Mn steels and cast iron with 14.5% Si showed satisfactory resistance in the production of hexamethylenetetramine. Chas. Blanc

METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

Ca

12

Chemical stability of Ni-resist to the action of corrosive agents. I. Ya. Klinov. Org. Chem. Ind. (U. S. S. R.) 7, 173-6(1940).—Exptl. evidence shows that the resistance of Soviet Ni-resist to the action of acids and aq. NaCl is equal to that of American products as reported by Müller (C. A. 33, [illegible]) and Russell (C. A. 30, [illegible]).

Chas. Blanc

METALLURGICAL LITERATURE CLASSIFICATION

Ch

2

[illegible], in memoriam, [illegible].
[illegible] et al. Uspekhi Khim. 9, 319-20(1940).
[illegible] Vernadskii, 1867-40. L. P.
[illegible] Akad. [illegible]
F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

A.C.S

General

Nonmetallic materials as a substitute for nonferrous metals and alloys. I. YA. [illegible]. *Vestnik Inzhenerov i Tekh.* 1940, No. [illegible]; *Khim. Referat. Zhur.* 4 [4] 100-101 (1941).—K. describes the properties of materials suitable for replacing nonferrous metals, e.g., ceramic products, fused diabase, fused quartz, glass, bonding materials, plastics, wood, etc. Directions are given for the development of such materials. See *Ceram. Abs.* 21 [7] 129 (1942).

M.Ho

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

M

6

*The Resistance of Special Metals and Alloys to Mineral Acids. I. Ia. Klinov (*Khim. Mashinostroenie*, 1940, (11/12), 20-26).—(In Russian.) Data are given which were obtained from tests on steels and a considerable number of copper, aluminium, and lead alloys in H_2SO_4, HCl, H_3PO_4, H_2SO_3, and HNO_3. Bronzes (aluminium, manganese, and others) and red copper appear to be resistant to 0·5–40% H_2SO_4 solutions at room temperature; at 60° C. only lead and its alloys among the non-ferrous materials can be used. At 200° C. and with pressures up to 15 atmospheres, some of the bronzes can be used for concentrations of acid up to 0·6%. Aluminium, Duralumin, and bronzes resist H_2SO_4 with 0·2–0·6% of SO_2 at 60° C. Aluminium is suitable for use with high concentrations of HNO_3 at temperatures below 100° C.—N. A.

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

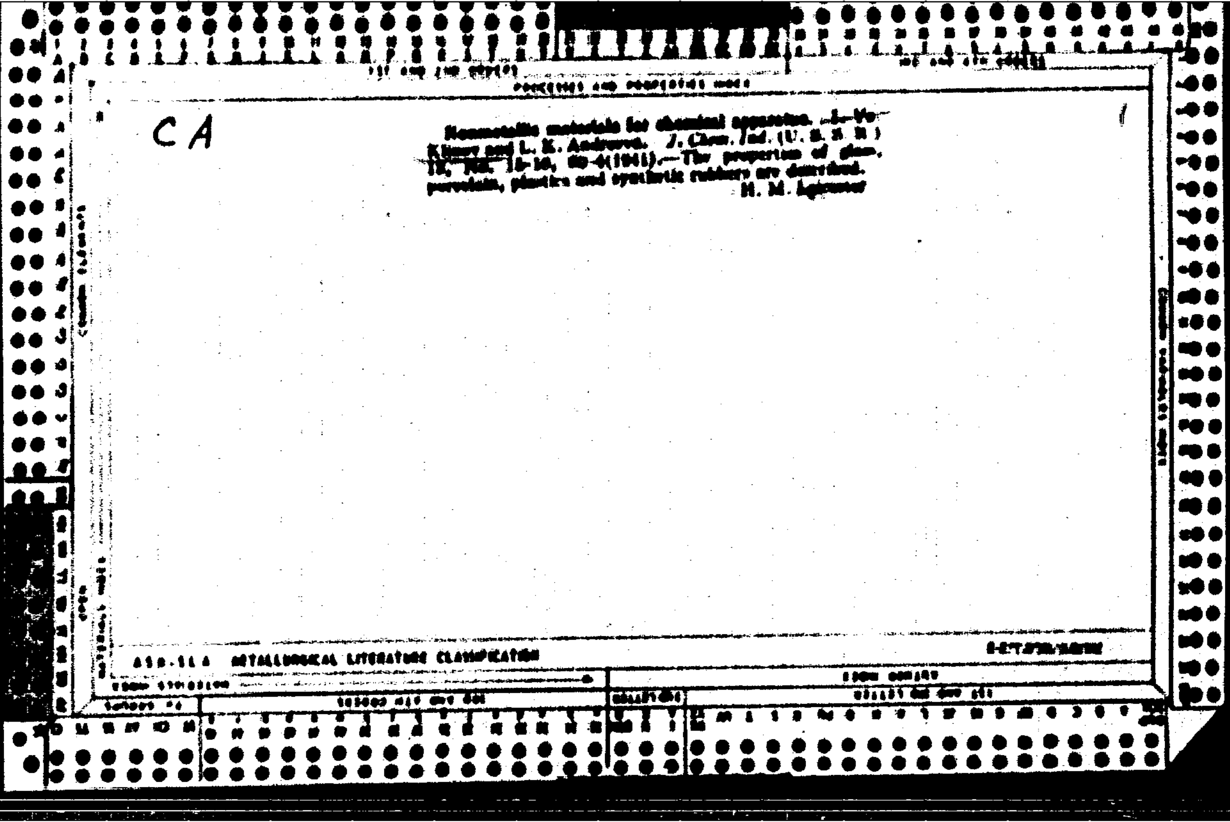
PROCESSES AND PROPERTIES INDEX

M

6

*The Effect of Chloride Additions on the Corrosive Action of Phosphoric Acid on Metals. I. Ya. Klinov (Korroziya i Bor'ba s Nei, 1941, 7, (1), 23-27). [In Russian.] Nickel-chrome steels, and silicon-molybdenum, silicon, and chromium cast iron are not attacked in a solution of phosphoric acid (sp. gr. 1·23) containing silicon fluoride compounds. In a solution containing, besides phosphoric acid, HCl and chlorine, only silicon-molybdenum cast iron and, to a certain extent, lead can be used. Monel, aluminium bronze, silicon bronze, and brass were not found to be satisfactory.—N. A.

METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

CA

1

Nonmetallic materials for chemical apparatus. I. V. Klimov and L. K. Andreeva. J. Chem. Ind. (U. S. S. R.) 18, No. 15-16, 59-61(1941).—The properties of glass, porcelain, plastics and synthetic rubbers are described. H. M. Leicester

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

M

7

*Effect of Mineral Acids on Metals and Alloys. I. Ya. Klinov (Trudy Vsesoy. Konf. Korrozii Metallov, 1943, 2, 216-226; Brit. Chem. Abs., 1944, [B I], 174).—[In Russian.] Chromium-nickel-manganese and chromium steels cannot be used in H_2SO_4; copper, aluminium bronze, phosphor- and manganese-bronze, and chromium-nickel steels resist 0·5-40% H_2SO_4 at room temperature; only silicon-iron resists 50% H_2SO_4 at 200° C. Ni-resist (nickel 14, copper 6·25, chromium 3·45, carbon 2·0, silicon 1·6, manganese 0·60%, remainder iron) can be used for 10% HCl at room temperature, and Antichlor (silicon 14·1, molybdenum 3·40, carbon 0·77, manganese 0·30, phosphorus 0·41, chromium 0·10%, remainder iron) for 10% HCl at 100° C. Chromium-nickel steels can be used in HNO_3 of any concentration at less than 70° C.; pure aluminium and chromium steel resist dil. HNO_3 at lower temperatures.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

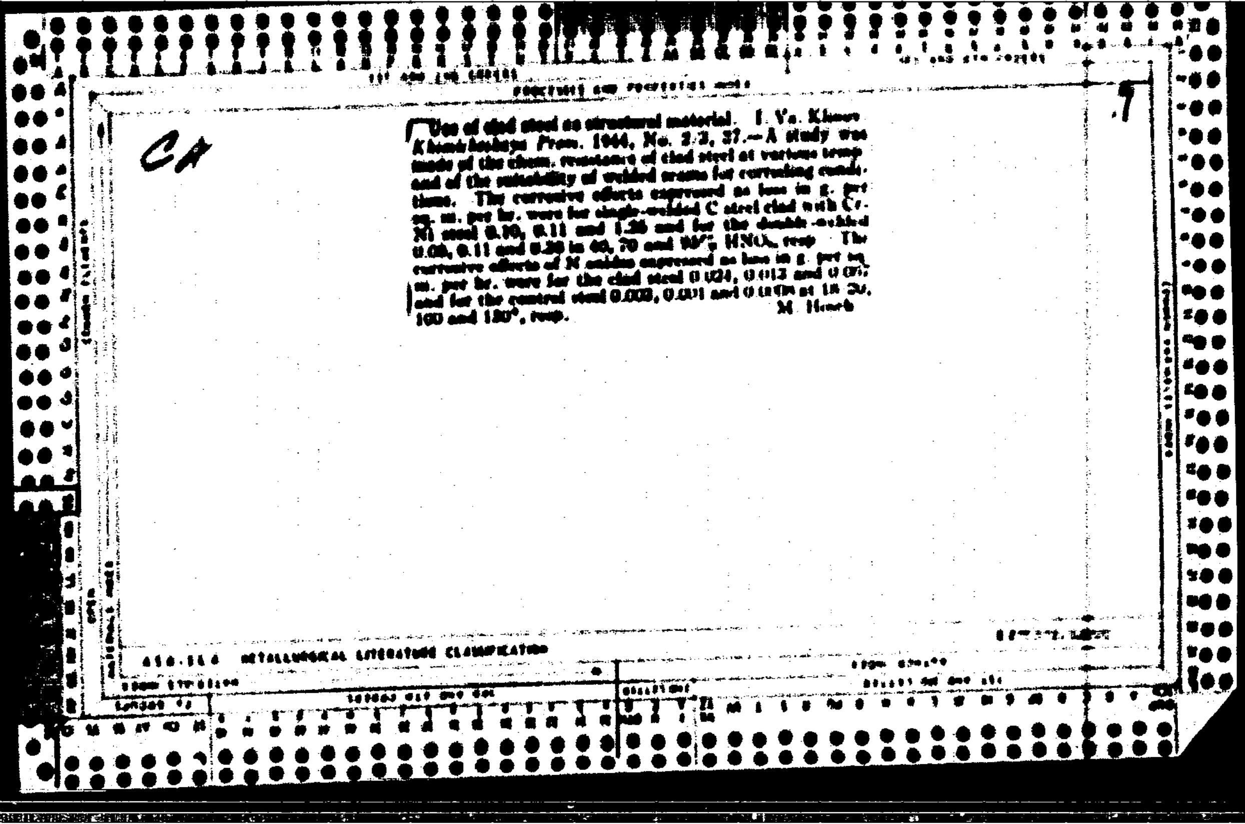
04

13

PROCESSES AND PROPERTIES INDEX

Chlorovinyl resins as chemically resistant materials. D. I. [illegible] and I. Ya. Klinov. *Khimicheskaya Prom.* [illegible], No. 1, 21-3.—Polychlorovinyl tubes and sheets (plasticizer content up to 40%) and a chlorinated mixt. of polychlorovinyl and a filler were tested for their resistance to HCl (d. 1.19), HNO_3 (d. 1.4), H_2SO_4 (d. 1.84), fuming H_2SO_4, and mixed acids at temps. from −20 to +60°. Pure polychlorovinyl is suitable for making tubes for conveying these corrosive liquids. The sheet material in thicknesses of 0.5-2.5 mm. can be used for lining chem. app., as can also chlorinated polychlorovinyl lacquers and paints. Suitable fillers for the lacquers are ZnO, kaolin, coke, ground Al_2O_3, etc. M. Hosch

METALLURGICAL LITERATURE CLASSIFICATION



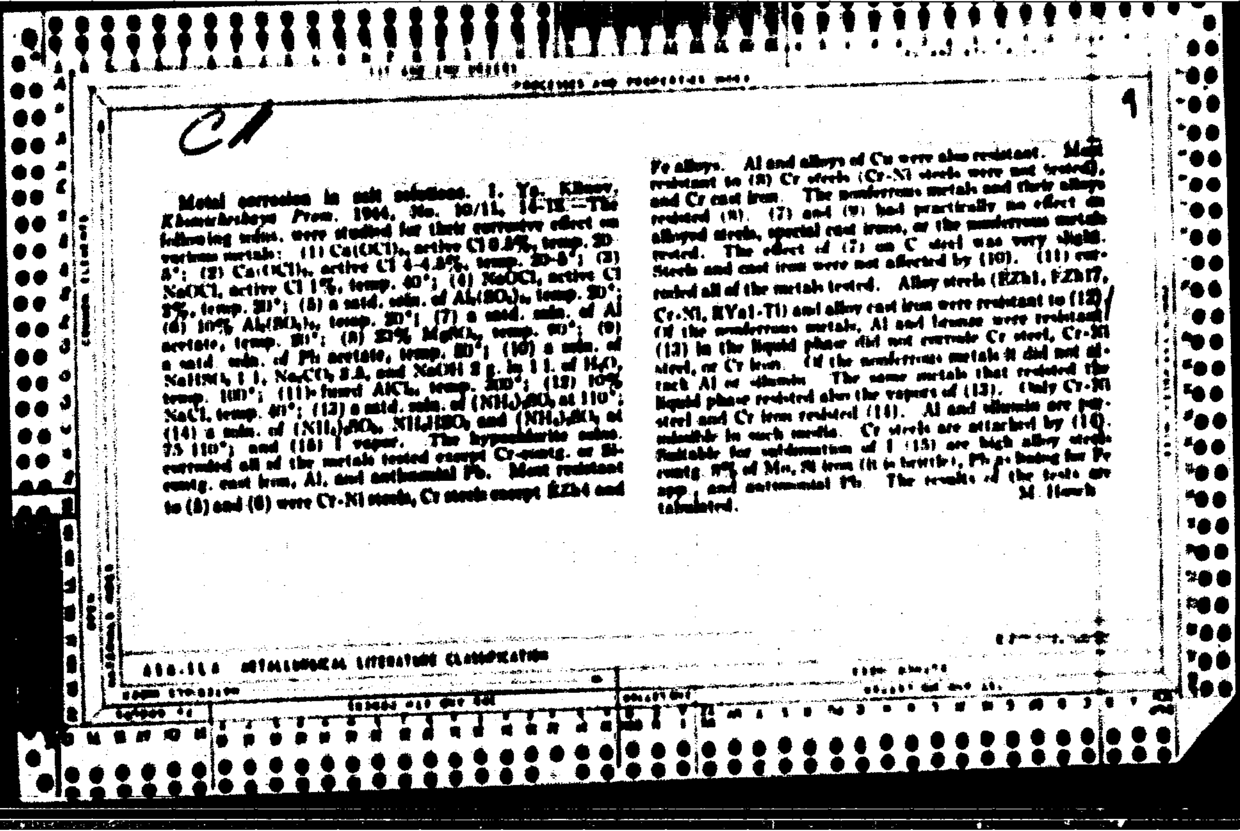
CA

7

PROCESSES AND PROPERTIES INDEX

Use of clad steel as structural material. I. Ya. [illegible] Khimicheskaya Prom. 1944, No. 2/3, 37.—A study was made of the chem. resistance of clad steel at various temps. and of the suitability of welded seams for corroding conditions. The corrosive effects expressed as loss in g. per sq. m. per hr. were for single-welded C steel clad with Cr-Ni steel 0.10, 0.11 and 1.26 and for the double-welded 0.08, 0.11 and 0.20 in 60, 70 and 90% HNO_3, resp. The corrosive effects of N oxides expressed as loss in g. per sq. m. per hr. were for the clad steel 0.024, 0.013 and 0.07, and for the control steel 0.003, 0.001 and [illegible] at 18-20, 100 and 120°, resp. M. Hosch

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

C1

1

Metal corrosion in salt solutions. I. Ya. Kliuev. *Khimicheskaya Prom.* 1944, No. 10/11, 16-18.—The following solns. were studied for their corrosive effect on various metals: (1) $Ca(OCl)_2$, active Cl 0.3%, temp. 20-8°; (2) $Ca(OCl)_2$, active Cl 4-4.5%, temp. 20-8°; (3) NaOCl, active Cl 1%, temp. 40°; (4) NaOCl, active Cl 5%, temp. 20°; (5) a satd. soln. of $Al_2(SO_4)_3$, temp. 20°; (6) 10% $Al_2(SO_4)_3$, temp. 20°; (7) a satd. soln. of Al acetate, temp. 20°; (8) 23% $MgCl_2$, temp. 60°; (9) a satd. soln. of Pb acetate, temp. 20°; (10) a soln. of $NaHSO_4$ 1 l., Na_2CO_3 3.4, and NaOH 2 g. in 1 l. of H_2O, temp. 100°; (11) fused $AlCl_3$, temp. 200°; (12) 10% NaCl, temp. 40°; (13) a satd. soln. of $(NH_4)_2SO_4$ at 110°; (14) a soln. of $(NH_4)_2SO_4$, NH_4HSO_4 and $(NH_4)_2SO_3$ at 75-110°; and (15) I vapor. The hypochlorite solns. corroded all of the metals tested except Cr-contg. or Si-contg. cast iron, Al, and antimonial Pb. Most resistant to (5) and (6) were Cr-Ni steels, Cr steels except EZh4 and Fe alloys. Al and alloys of Cu were also resistant. Most resistant to (8) Cr steels (Cr-Ni steels were not tested), and Cr cast iron. The nonferrous metals and their alloys resisted (8). (7) and (9) had practically no effect on alloyed steels, special cast irons, or the nonferrous metals tested. The effect of (7) on C steel was very slight. Steels and cast iron were not affected by (10). (11) corroded all of the metals tested. Alloy steels (EZh1, EZh17, Cr-Ni, EYa1-Ti) and alloy cast iron were resistant to (12). Of the nonferrous metals, Al and bronze were resistant. (13) in the liquid phase did not corrode Cr steel, Cr-Ni steel, or Cr iron. Of the nonferrous metals it did not attack Al or silumin. The same metals that resisted the liquid phase resisted also the vapors of (13). Only Cr-Ni steel and Cr iron resisted (14). Al and silumin are permissible in such media. Cr steels are attacked by (15). Suitable for sublimation of I (15) are high alloy steels contg. 9% of Mn, Si iron (it is brittle), Pb as lining for Fe app., and antimonial Pb. The results of the tests are tabulated.

M. Hosch

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

ca

9

Corrosion of some structural steels operating under stress. I. Ya. Klinov and G. L. Shvarts. *Khim. Prom.* 1947, No. 10, 13-17. Samples of steels used in the manufacture of chem. app. were tested in HNO_3 5, 10, and 57.5% at 20°, in NH_4NO_3 37% at 20 and 80°, and in NaOH 40-67% at 120° at atm. pressure and 3.5 atm. Specimens were fastened within a frame and the tension was applied by means of calibrated springs. Specimens in which the stresses were equally distributed longitudinally and throughout the cross section when loaded to the yield point or higher, behaved in HNO_3, in hot NH_4NO_3 and NaOH the same as specimens without any load. Specimens having nonuniform structure longitudinally cracked when exposed to these tests. Specimens in which the stress was locally centralized by notching cracked in 37% NH_4NO_3 under stresses equalling their elastic limit or somewhat lower, but remained unaffected by stresses equalling 80% of their elastic limit. In hot NaOH, low C-steel specimens cracked when the stress applied exceeded their elastic limit by 35-40%. M. Hosch

METALLURGICAL LITERATURE CLASSIFICATION

KLINOV, I.Ya., dotsent; SHVARTS, G.L., nauchnyy sotrudnik

Corrosion of some structural steel varieties subjected to stresses.
Khim.prom.no.10:297-301 O'47. (MIRA8:12)

1. Moskovskiy institut khimicheskogo mashinostroyeniya
(Steel, Structural--Corrosion)

9

CA

Corrosion testing of statically stressed metals. I. Ya. Klinov and G. L. Shvarts. *Zavodskaya Lab.* 14, 228-32 (1948).—Testbars, without and with notch, clamped in a special frame and subjected to an axial tension of known magnitude, are exposed to the corrosive medium, and the time elapsing until occurrence of rupture is detd. for various tensile stresses. The plots give regular curves of increasing times with decreasing stress, with asymptotic approach to a lower limit of stress at which no rupture will occur even on very prolonged exposure. N. Thon

KLINOV, I. YA.

Korroziia khimicheskoi apparatury i korrozionnostoikie materialy. Dop. v kachestve uchebn. posobiia dlia khimiko-tekhnolog. vuzov i fak-tov. Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1950. 291 p. illus.

Includes bibliographies.

Corrosion of chemical apparatus and corrosion resisting materials.

DLC: TP157.K6

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

KLINOV, I. YA.

②

Corrosion in brine pipes (salt solution) in soda (sodium carbonate) factories and how to prevent it. I. Ya. Klimov and M. S. Veshenkova. *Trudy Moskov. Inst. Khim. Mashinostroeniya* 1956, No. 1(Whole No. 9), 81-94.—Internal conditions for steel and iron pipe are not corrosive. External conditions are corrosive because ground waters continually bring to different parts of the pipe electrolyte solns. of different concns. and fresh portions of O_2. Corrosion in cast iron sections occurs in the socket joint at the contact line with Pb caulking as a result of electrochem. pair in an aggressive medium. Corrosion in steel section was principally due to poor construction and assembly practices such as nonfusion and porosity of welded joints and overheating of adjacent metal. Proper construction practices and protective coating are recommended as means to overcome excessive corrosion. V. N. Bodnarskii

PRITULA, V.A.; KLINOVA, I.Ya., redaktor; FRISHMAN, R.A., redaktor; POGUDKIN, P.V., tekhnicheskiy redaktor.

[Cathodic protection of plant equipment] Katodnaia zashchita zavodskoi apparatury. Pod red. I.A.Klinova. Moskva, Gos. nauchno-tekhn. izd-vo khimicheskoi lit-ry, 1954. 59 p. (Korroziia v khimicheskikh proizvodstvakh i sposoby zashchity ot nee, no.1) [Microfilm] (MLRA 8:1)
(Corrosion and anticorrosives)

KLINOV, I.Ya.; **IZGARYSHEV, N.A.**, retsenzent; **LEVIN, I.A.**, kandidat tekhnicheskikh nauk, redaktor; **MODEL', B.O.**, tekhnicheskiy redaktor; **MATVEYEVA, Ye.N.**, tekhnicheskiy redaktor.

[Corrosion in chemical equipment and anticorrosive materials] Korroziia khimicheskoi apparatury i korrozionnostoikie materialy. 2-e izd., perer. i dop. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1954. 407 p. [Microfilm] (MLRA 8:1)

1. Chlen-korrespondent Akademii nauk SSSR.(for Izgaryshev).
(Corrosion and anticorrosives)

USSR/Chemistry - Corrosion-proof materials FD-1555

Card 1/1 : Pub. 50-12/25

Author : Rychkov, A. I., Klinov, I. Ya.

Title : Experience in the application of Asbovinyl as a corrosion-proof material

Periodical : Khim. prom., No 8, pp 492-93 (44-45), Dec 1954

Abstract : Asbovinyl (polymerized ethynol containing disintegrated asbestos as a filler) was found to be a satisfactory corrosion-proof material that withstands the action of hydrochloric acid in all concentrations, chloride, chloride of lime, and some other chemicals. It forms a satisfactory substitute for lead and other nonferrous metals in protective coatings and is a suitable material for corrosion-proof tiles, pipes, and parts of chemical equipment. One table.

Institution :

Submitted :

KLIMOV, I.Ya.

SHVYRYAYEV, Grigoriy Konstantinovich; KLIMOV, I.Ya., redaktor; KISELEV, V.S., redaktor; KLIMOV, I.Ya., redaktor; [illegible] V.I., redaktor; POLYAKOV, K.A., redaktor; SAGALAYEV, G.V., redaktor; AYZENSHTAT, I.I., redaktor; KORNEYEVA, V.I., tekhnicheskiy redaktor
[Electrolytic metal coating for parts and articles for the chemical industry] Elektroliticheskie metallicheskie pokrytiia detalei i izdelii v khimicheskoi promyshlennosti. Pod. red. I.IA.Klinova, Moskva, Gos.nauchno-tekhn.izd-vo khimicheskoi lit-ry, 1955. 54 p. (Korroziia v khimicheskikh proizvodstvakh i sposoby zashchity, no.2) (MLRA 8:10)
(Electroplating)

[illegible]

KLINOV, I. YA., Docent

Paper Industry

Using asbestos-vinyl plastic in pulp and paper industry. Bum.prom. 28, No. 4, 1953.

SO: Monthly List of Russian Accessions, Library of Congress, June 1953, Uncl.

KLINOV, Iosif Yakovlevich; KRUCHININA, V.I., redaktor; AYZENSHTAT, I.I., redaktor; KORNEYEVA, V.I., tekhnicheskiy redaktor

[Wood as a material for chemical apparatus] Derevo kak material dlia khimicheskoi apparatury. Pod red. V.I.Kruchinina. Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1956. 53 p. (Korroziia v khimicheskikh proizvodstvakh i sposoby zashchity, no.5) (MIRA 9:8)
(Wood) (Chemical apparatus)

BABAKOV, Aleksey Alekseyevich; KLINOV, I.Ya., redaktor; AYZENSHPAT, I.I., redaktor; KORNEYEVA, V.I., tekhnicheskiy redaktor

[Stainless steel, properties, and chemical stability in various corrosive media] Nerzhaveiushchie stali svoistva i khimicheskaia stoikost' v razlichnykh agressivnykh sredakh. Pod red. I.IA. Klinova. Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1956. 129 p. (Korroziia v khimicheskikh proizvodstvakh i sposoby zashchity, no.8)
(Corrosion and anticorrosives) (MIRA 9:12)

[illegible]

SMIRNOV, L.A.; KANTAKUZEN, A.V.; BAKLANOV, N.A., red.; VOLODIN, V.Ye., red.;
KISELEV, V.S., red.; KLIMOV, I.Ya., red.; KRUCHININ, V.I., red.;
SAGALAYEV, G.V., red.; UDYMA, P.G., red.; AYZENSHTAT, I.I., red.;
SHPAK, Ye.G., tekhn.red.

[Acidproof ceramic chemical apparatus] Khimicheskaia apparatura iz kislotoupornoi keramiki. Pod red.N.A.Baklanova. Moskva, Gos. nauchno-tekhn.izd-vo khim.lit-ry, 1957. 164 p. (Korroziia v khimicheskikh proizvodstvakh i sposoby zashchity, no.10) (MIRA 10:12)
(Chemical apparatus)

Klinov, I. Ya.,

KLINOV, I.Ya., prof.; FABRIKANT, T.L., nauchnyy sotrudnik; MYL'NIKOV, V.P., inzhener.

Use of carbon and graphite materials in the woodpulp and paper industry. Bum.prom.32 no.8:6-8 Ag '57. (MIRA 10:12)

1. Moskovskiy institut khimicheskogo mashinostroyeniya (for Klinov, Fabrikant).

(Graphite) (Woodpulp industry) (Carbon)

FABRIKANT, Tamara L'vovna; VOL'TMAN, Vol'f Leonovich; KLINOV, I.Ya., red.; AYZENSHTAT, I.I., red.; KAZUL'SKAYA, V.F., tekhn.red.

["Asbovinyl" and its use in the chemical industry] Asbovinil i ego primenenie v khimicheskoi promyshlennosti. Pod red. I.IA.Klinova. Moskva, Gos.nauchno-tekhn.izd-vo khim.lit-ry, 1958. 78 p. (Korroziia v khimicheskikh proizvodstvakh i sposoby zashchity, no.11)
(MIRA 12:3)

(Protective coatings) (Corrosion-resisting materials)

KLINOV, I.Ya., prof.

New nonmetallic corrosion-resistant materials. Khim. nauka i prom. 3 no.4:492-499 '58. (MIRA 11:10)
(Corrosion and anticorrosives)
(Nonmetallic materials)

80315
SOV/81-59-7-23759

5.2400
Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 7, p 302 (USSR)

AUTHOR: Klinov, I.Ya.

TITLE: The Role and Importance of Carbon-Graphite Materials

PERIODICAL: Sb. Kom-t po korrozii i zashchite metallov Vses. sov. nauchno-tekhn. o-v, 1958, Nr 5, pp 3 - 7

ABSTRACT: Carbon-graphite materials have a good heat conductivity and a high thermal resistance which distinguishes them favorably from other non-metallic materials. At the same time they are inert against the action of most aggressive media. Apparatus, parts, pipes, pumps, slabs and blocks for lining for the chemical industry are prepared of carbon-graphite materials. Graphite is especially efficient for the manufacture of heat-exchange apparatus, and carbon in those cases, where a high thermal resistance, hardness and abrasion resistance is required, e.g., for digesters and reactors in the production of sulfite cellulose. The porosity of carbon-graphite materials is eliminated recently by impregnating them by various acid- and alkali-resistant -

4

Card 1/2

SAGALAYEV, Grigoriy Vasil'yevich; KLINOV, I.Ya., red.; VEKSER, A.A.,
red.; ZAZUL'SKAYA, V.F., tekhn.red.

["Antegemit" and its use] Antegmit i ego primenenie. Pod red.
I.IA.Klinova. Moskva, Gos.nauchno-tekhn.izd-vo khim.lit-ry,
1959. 86 p. (Korrosiia v khimicheskikh proizvodstvakh i sposoby
zashchity, no.14) (MIRA 12:11)
(Nonmetallic materials)
(Corrosion-resistant materials)

KLINOV, I.Ya., doktor tekhn.nauk, prof.; ZARETSKIY, Ye.M., kand. tekhn. nauk

Review of the book "Inhibitors of the corrosion of metals" by I.N. Putilova, S.A. Balezin, V.P. Barannik. Reviewed by I.IA. Klinov, E.M. Zaretskii. Khim. mash. no.2:47-48 Mr-Ap '59. (MIRA 12:7)

(Corrosion and anticorrosives)
(Putilova, I.N.) (Balezin, S.A.)
(Barannik, V.P.)

KLIMOV, I.Ya., prof., doktor tekhn. nauk; ZARETSKIY, Ye.M., dotsent, kand. tekhn. nauk; SALEM, R.R., inzh.

Effect of the construction characteristics of installations and equipment on their resistance to corrosion. Khim. mash. 3 no.3: 3-6 My-Je '59. (MIRA 12:12)
(Chemical engineering--Equipment and supplies)
(Corrosion and anticorrosives)

KLINOV, I.Ya., doktor tekhn. nauk, prof.; ZARETSKIY, Ye.M., kand. tekhn. nauk, dots.

Review of the books: "Corrosion and the protection of metals. Calculations". Reviewed by I.IA. Klinov, E.M. Zaretskii. Khim. mash. no.6:47 N-D '59. (MIRA 13:3)

(Corrosion and anticorrosives)

MIKHAL'YEV, Boris Ivanovich; SHATALOV, Anatoliy Yakovlevich; MARSHAKOV, Igor' Kirillovich; KLINOV, I.Ya., prof., doktor tekhn.nauk, nauchnyy red.; BIRYUKOV, G.F., red.izd-va; NOVIKOV, M.V., tekhn.red.

[Polymers are new corrosion-resistant materials] Polimery - novye korrozionno-stoikie materialy. Nauchn.red.I.IA.Klinov. Voronezh, Izd-vo Voronezhskogo univ., 1960. 106 p.
(MIRA 14:3)

(Corrosion-resistant materials) (Polymers)

PHASE I BOOK EXPLOITATION SOV/4667

Klinov, Iosif Yakovlevich

Korroziya khimicheskoy apparatury i korrozionnostoykiye materialy (Corrosion of Chemical Equipment and Rustproof Materials) 3d ed., rev. and enl. Moscow, Mashgiz, 1960. 511 p. 12,000 copies printed.

Ed.: N. P. Zhuk, Candidate of Chemical Sciences; Managing Ed. for Literature on Machine Building and Instrument Construction (Mashgiz): N. V. Pokrovskiy, Engineer; Ed. of Publishing House: A. L. Tairova; Tech. Ed.: A. Ya. Tikhanov.

PURPOSE: This book is intended for students in chemical technology, petroleum engineering, and machine-building schools of higher education. It may also be used by technicians and engineers in chemical and chemical equipment plants, consulting engineer organizations, and scientific research institutes.

COVERAGE: The book treats the principles of the study of corrosion and the protection of metals, the theoretical principles of electrochemical and chemical corrosion, problems in the corrosion resistance of metals, nonmetals, and protective coatings. The properties of structural materials used in technology,

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especially in the chemical and related industries, are also described. No personalities are mentioned. References, all Soviet, follow each chapter.

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KLINOV, I.YA.

PHASE I BOOK EXPLOITATION SOV/5419

Spravochnik po mashinostroitel'nym materialam, tom 4: Nemetallicheskiye materialy (Handbook on Machine-Building Materials, Vol. 4: Nonmetallic Materials) Moscow, Mashgiz, 1960. 773 p. Errata slip inserted. 46,000 copies printed.

Ed.: G.I. Pogodin-Alekseyev, Doctor of Technical Sciences, Professor; Ed. of this Vol.: A.B. Levin, Doctor of Technical Sciences, Professor; Ed. of Publishing House: V.I. Rybakova, Engineer; Tech. Ed.: T.F. Sokolova; Managing Ed. for Information Literature (Mashgiz): I.M. Monastyrskiy, Engineer.

PURPOSE: This book is intended for machine-building and construction engineers, architects, and other persons interested in the properties of building materials.

COVERAGE: This is the fourth of a 4-volume Handbook on Machine-Building Materials. Volume 4 discusses nonmetallic materials suitable for use in machine building and in other constructional applications. Textile, wood, plastic, ceramic, rubber, and glass materials and laminates of these materials are reviewed and data on their physical and mechanical properties are listed. No personalities are mentioned. References follow individual chapters.

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SALEM, R.R., inzh., ZARETSKIY, Ye. M., kand.tekhn.nauk; KLIMOV, I. Ya., doktor tekhn.nauk prof.

Particular features of steel corrosion in crevices. Khim.mash. no.2:30-33 Mr-Ap '60. (MIRA13:6)

(Steel--Corrosion)

S/184/60/000/004/002/021
A109/A029

18.1285

AUTHORS: Klinov, I.Ya., Professor, Doctor of Technical Sciences; Andreyeva, V.V., Candidate of Chemical Sciences

TITLE: Titanium and Its Alloys as Construction Materials

PERIODICAL: Khimicheskoye Mashinostroyeniye, 1960, No. 4, pp. 5 - 8

TEXT: The article reviews the results of tests carried out by M.A. Vorob'yeva on the suitability of titanium and its alloys for construction purposes. Their mechanical properties depend on the content of oxygen, nitrate and nitrogen which increase their hardness and fatigue strength while reducing their plastic properties. The best plastic properties were observed in titanium obtained by the iodine method. The fatigue stress of BT1 (VT1) titanium decreases from 60 to 23 kg/mm^2 at 400°C and the yield strength from 47 to 19 kg/mm^2 at 400°C. Low temperatures increase the fatigue stress and reduce the plasticity of titanium. Although the electrode potential of titanium is negative, its surface is purified by oxygen which renders the potential positive. This is probably due to the formation of a protective TiO_2 coating. During corrosion in hydrochloric acid, titanium is sometimes covered by a protective TiH_2 coating. Sulfuric acid

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Titanium and Its Alloys as Construction Materials

S/184/60/000/004/002/021
A109/A029

produces insoluble compounds of TiO_2 with H_2SO_4, and nitric acid produces H_2TiO_3 coating. Both coatings protect the metal from acids. From the economic point of view the use of titanium is feasible when high corrosion resistance under continuous operating conditions is required and when no corrosive impurities are admitted. Pure titanium rather than its alloys should be used whenever it is considered sufficiently corrosion-resistant and when no additional alloying is required. Figure 2 shows results of corrosion tests carried out on four types of titanium in 50%-sulfuric acid at 50°C. The influence of admixtures on the corrosion rate of titanium in 63%-nitric acid at 50°C is shown in Figure 3. The corrosion rate can be reduced to zero by addition of HNO_3, $K_2Cr_2O_7$, $KMnO_4$, HNO_3 and H_2O_2 oxidizers or other compounds. These admixtures raise the titanium solution potential to a higher value than the Flade potential. Passivation can also be obtained by addition of Cu^{2+}, Fe^{3+}, Pt^{4+}, Pd^{4+}. Au^{3+}, etc. Titanium is suitable for construction of chemical machinery provided that the passivation has been achieved by formation of a protective coating and that the corrosion is not accelerated by changing operating conditions. Dry gaseous chlorine effects strong corrosion of titanium. In reaction with dry chlorine an inflammation of chloride may result. The presence of as little as 0.005% of moisture inhibits corrosion. At 100°C the corrosion rate of titanium in moist chlorine does not

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S/184/60/000/004/002/021
A109/A029

Titanium and Its Alloys as Construction Materials

exceed 0.0025 mm/year. Titanium retains its resistance in many organic solutions in which 18-8 nickel-chromium steels corrode. It is quickly corroding in boiling citric acid and in oxalic acid. Corrosion resistance and mechanical properties can be greatly improved by alloying with metals of higher corrosion resistance. The time effect on corrosion of cast titanium and titanium-based alloys in a 1 N sulfuric acid solution at $50^{\circ}C$ was studied. The highest corrosion resistance was found in titanium-nickel alloys. Variation of corrosion rate depending on the content of molybdenum and the concentration and temperature of sulfuric acid was investigated. The highest corrosion resistance was achieved by addition of Mo, Ta, Nb, Zr and Cu. Titanium can be used either as basic material or for plating. In the latter case care should be taken that linear expansion coefficients do not differ too strongly from each other as this may lead to deformation or even destruction of the plating. In view of this, titanium can be recommended for plating of carbon and stainless steels. There are 9 figures, 1 table and 2 Soviet references.

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Titanium and Its Alloys as Construction Materials

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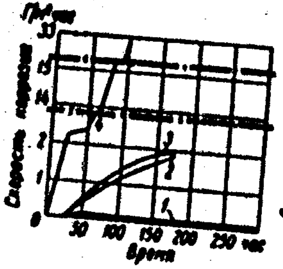
A109/A029

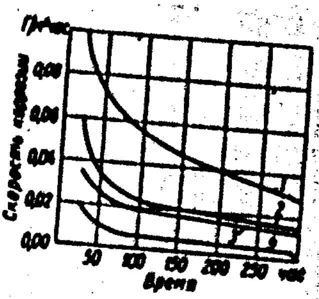
Figure 2: Dependence of the Rate of Titanium Corrosion on the Test Duration in 50%-Sulfuric Acid at 50°C: 1 - forged VT1 titanium; 2 - rolled titatium; 3 - cast titanium; 4 - sintered titanium.

Figure 3: Dependence of the Rate of Titanium Corrosion on the Test Duration in 63%-Nitric Acid at 50°C: 1 - forged VT1 titanium; 2 - cast titanium; 3 - rolled titanium; 3 - sintered titanium.



Фиг. 2. Зависимости скорости коррозии титана от времени испытания в 50%-ной серной кислоте при 50°:

1 — кованый титан ВТ1; 2 — катаный титан; 3 — литой титан; 4 — спеченный титан [1].



Фиг. 3. Зависимость скорости коррозии титана от времени испытания в 63%-ной азотной кислоте при 50°:

1 — кованый титан ВТ1; 2 — литой титан; 3 — катаный титан; 4 — спеченный титан. [1].

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S/081/61/000/011/018/040
B105/B203

AUTHORS: Salem, R. R., Zaretskiy, Ye. M., Klinov, I. Ya.

TITLE: Slit corrosion of low-carbon steel

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 11, 1961, 290-291, abstract 11И160 (Tr. Mosk. in-ta khim. mashinostr., 1960 22, 63-74)

TEXT: The authors studied the distribution and diffusion of O_2 dissolved in the electrolyte in slits formed by metal with inert surface, and clarified the distribution of corrosions inside the slit with respect to position and time. They used for their experiments carbon steel of the type Ст.3 (St. 3), and an air-saturated 0.5 N NaCl solution as corrosive medium. To prevent thermal convection, the experiments were made at constant temperature. The investigations showed that O_2 was mainly consumed in the first 30 min from the start of immersing the specimen in the slit into the solution. In slits of >1.0 - 1.5 mm, the concentration

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S/081/61/000/011/018/040
B105/B203

Slit corrosion of low-carbon steel

of dissolved O_2 decreases along the depth of the slit more uniformly than in narrow slits, and complete consumption of O_2 in the depth of the slit occurs much later. In narrow slits (0.05-0.2 mm), the amount of dissolved O_2 decreases rapidly, and at a distance of 5-6 mm, its quantity is 5-6 times smaller than at the inlet of the slit after 10-15 min from the beginning of the experiment. The behavior of the metal in the slit, when there is no contact with the metal which is in a free O_2 current, shows that in a wide slit the cathode surface occupies a much larger area than in a narrow one; therefore, the rate of corrosion (RC) is higher in the wide slit. It is stressed that the RC is even lower in the narrow slit, when there is no contact with the metal in the electrolyte, than the RC of the same metal which is in a free current of dissolved O_2. In a contact of the metal in the slit with the metal in the electrolyte which is freely flown around by the O_2 of the solution, the metal surface in the slit becomes completely anodic very quickly, and is destroyed the more intensively, the larger the cathode surface. An increase in the surface

Card 2/3

Slit corrosion of low-carbon steel

S/081/61/000/011/018/040
B105/B203

of the contacting metal in the volume of the electrolyte increases the RC of the metal in the slit. [Abstracter's note: Complete translation.]

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Card 3/3

25451

S/137/61/000/006/083/092
A006/A101

18.8300

AUTHOR: Klinov, I.Ya.

TITLE: The use of titanium and titanium alloys in chemical machinebuilding

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 6, 1961, 30, abstract 6I214 ("Tr. Mosk. in-ta khim. mashinostr.", 1960, v. 22, 75 - 85)

TEXT: The author analyzes corrosion resistance of commercial Ti in various aggressive chemical media, such as mineral and organic acids and their salts; Cl_2, H_2S, SO_2, H_2O_2, Br_2 solutions, molten salts and metals (Sn, Bi, Zn, Pb, K, Na and S). Examples are quoted of chemically stable Ti alloys (Ti-Cu, Ti-Zr, Ti-Mo systems and also Ti-Al-Mo, Ti-Zr-Ni, Ti-Zr-Fe). There are 10 references.

G. Tyurin

[Abstracter's note: Complete translation]

Card 1/1

S/081/61/000/010/007/029
B117/B207

AUTHORS: Klinov, I. Ya., Vorob'yeva, M. A., Borisova, A. S.

TITLE: Study of the corrosion resistance of aluminum in sulfuric acid and mixture

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1961, 285, abstract 10И193 (10I193). ("Tr. Mosk. in-ta khim. mashinostr.", v. 22, 1960, 96-104)

TEXT: The corrosion rate of aluminum of all types was found to increase with the H_2SO_4 concentration, and to reach its maximum in 80% H_2SO_4 (up to 1.2 - 1.3 g/m^2 hr). It is pointed out that rolled aluminum tends to regular corrosion, whereas cast aluminum tends to intercrystalline cracking. The corrosion rate of all types of aluminum increases considerably at a temperature rise from 20° to 80°C, in any H_2SO_4 concentration. Rolled aluminum of the AB-000 (AV-000) and A-00 (A-00) types, as well as

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A-1 (A-1), may be used in low-concentrated H_2SO_4 at 20°-25°C. [Abstracter's note: Complete translation.]

S/081/61/000/019/073/085
B117/B110

AUTHORS: Klinov, I. Ya., Fabrikant, T. L.

TITLE: Improvement of the properties of asbovinyl masses by modification

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 19, 1961, 482, abstract 19P50 (Tr. In-ta khim. mashinostr., v. 22, 1960, 139 - 158)

TEXT: New formulas for preparing asbovinyl masses, which are used as fettling, are presented. These formulas ensure resistance to H_2SO_4 and NaOH with 30 and 5 % concentrations, and to HNO_3 with 20 and 5% concentration at 18° - 23°C and 95° - 100°C. In addition, they ensure increased stability with 1.5-year storage. [Abstracter's note: Complete translation]

Card 1/1

S/081/61/000/022/074/076
B144/B138

AUTHORS: Klinov, I. Ya., Vorob'yeva, M. A.

TITLE: Chemical resistance of some coating materials and their use in protecting chemical apparatus from corrosion

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 22, 1961, 483, abstract 22P283 (Tr. Mosk. In-ta khim. mashinostr., v. 22, 1960, 159 - 168)

TEXT: The chemical resistance to the direct effect of aggressive media was studied in the following compounds: ПСГ(PSG), ПС-2 (PS-2), and ПТ(PT) type polyisobutylene (I), a combination of I and ПОВ-30 (POV-30) and ПОВ-50 (POV-50) type polyethylene, "Brisol", "Relin", and 829-, 1976-, and 2566-type rubbers. Corrosion resistance was estimated from the degree of swelling and the variations in the physical and mechanical properties of the coating. Relin is hot suitable as an anticorrosive material, Brisol is stable in weakly acid and low-alkaline media at 60°C, its chemical resistance is higher than that of ruberoid. 829-, 1976-, and 2566-type rubbers are stable in up to 50% H_2SO_4 at 60 - 90°C and unstable

Card 1/2

ANDREYEVA, V.V.; KAZARIN, V.I.; KLINOVA, I.Ya., red.; BELEN'KAYA, S.M., red.; KOGAN, V.V., tekhn. red.

[New chemically stable structural metals] Novye konstruktsionnye khimicheski stoikie metallicheskie materialy. Pod red. I.IA.Klinova. Moskva, Goskhimizdat, 1961. 189 p. (Korroziia v khimicheskikh proizvodstvakh i sposoby zashchity, no.17) (MIRA 15:5)

(Corrosion--Resistant materials)

PRITULA, Vsevolod Aleksandrovich; KLIMOV, I.Ya., red.; GOLYATKINA, A.G., red. izd-va; VAYNSHTEYN, Ye.B., tekhn. red.

[Corrosion protection of underground pipes in factories] Zashchita zavodskikh podzemnykh truboprovodov ot korrozii. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 384 p. (MIRA 14:6)
(Pipes—Corrosion)

KLIMOV, I.Ya.; KUTSENOK, B.I.; FABRIKANT, T.L.; GIL'MAN, TS.I.

Chemically stable mastics based on a modified asbestos vinyl.
Plast.massy no.2:44-50 '61. (MIRA 14:2)
(Plastics) (Protective coatings)

KLIMOV, I. Ya. prof., doktor tekhn.nauk

Polymers-substitutes. NTO 3 no.2:22-24 F '61. (MIRA 14:3)

1. Zaveduyushchiy kafedroy korrozii khimicheskoy apparatury Moskovskogo instituta khimicheskogo mashinostroyeniya.
(Corrosion-resistant materials)

22989
S/184/61/000/004/002/004
D041/D112

18.8300

AUTHORS: Sidorkina, Yu.S., Engineer; Klinov, I.Ya., Doctor of Technical Sciences, Professor

TITLE: A high-speed method for investigating the tendency of 0Kh23N28M3D3T and Kh23N28M3D3T steels to intercrystalline corrosion

PERIODICAL: Khimicheskoye mashinostroyeniye, no. 4, 1961, 27-30

TEXT: The article describes an electro-chemical investigation carried out in order to prove the validity of method "В" ("V") proposed by NIIKhIMMASh for investigating the tendency of 0Х23Н28М3Д3Т (0Kh23N28M3D3T) and Х23Н28М3Д3Т (Kh23N28M3D3T) steels to intercrystalline corrosion. Method "V" was described by G.L. Shvarts and Yu.S. Kuznetsova (Ref. 1: Korroziya i iznos konstruktsionnykh materialov khimicheskogo mashinostroyeniya [Corrosion and wear of construction materials in the chemical machine-building industry], Sbornik statey NIIKhIMMASha, no. 25, Mashgiz, 1958) and by F.B. Slomyanskaya, G.L. Shvarts, F.F. Khimushin, Z.F. Istrina and Yu.S. Sidorkina (Ref. 2: Korroziya i iznos metallov [Corrosion and wear of metals], Trudy NIIKhIMMASha, vyp. 27, 1959). In the first part of the investigation

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the oxidation-and-restoration potentials of pure solutions (without samples) were measured according to the methods "A" ("A"), "V" and "AM" ("AM"). The compositions of the solutions were: for method "A" - 110 G of $CuSO_4 \cdot 5H_2O$ and 55 ml of H_2SO_4 with a specific weight of 1.84 per liter of water; for method "V" - 110 G of $CuSO_4 \cdot 5H_2O$ and 55 ml of H_2SO_4 with a specific weight of 1.84 per liter of water with the addition of zinc powder; and for method "AM" - 160 G of $CuSO_4 \cdot 5H_2O$ and 55 ml of H_2SO_4 per liter of water with the addition of copper shavings. The experiments lasted 144 hours. 32 G of copper shavings were added to 650 ml of solution in method "AM", and 3.25 G of zinc powder to 650 ml of solution in method "V". In the second part of the investigation the variation of the oxidation-and-restoration potential, depending on the quantity of the dissolved intercrystalline material in Kh23N28M3D3T and OKh23N28M3D3T steels, (Fig. 3) was studied. In the third part of the investigation the effect of the contact of copper on the steel samples was studied. Two samples were placed in a glass container provided with a reflux condenser. One sample was of Kh23N28M3D3T or OKh23N28M3D3T steel, the other of pure copper MO(MO) or Mn(M1). The steel samples were heated to 700°C for 20 minutes. The following results were obtained: 1) Method "V" is recommended for testing chrome-nickel-molybdenum-steels containing copper. This method showed that when the oxidation-and-restoration

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potential of the solution was 0.08 volts there was a tendency of these steels to intercrystalline corrosion. 2) A polarization effect of the current was not observed in the presence of zinc when method "V" was used. The potential values during the anode and cathode polarization practically coincide and become equal to the value of the oxidation-and-restoration potential of the solution (0.08 volts) at which intercrystalline corrosion begins. 3) The quantity of zinc powder and copper shavings does not affect the variation of the oxidation-and-restoration potential. 4) During tests made according to method "A", chrome-nickel-molybdenum-steels containing copper showed no tendency to intercrystalline corrosion when the oxidation-and-restoration potential was 0.45 volts. 5) A 24 hours' test according to method "AM" showed that the oxidation-and-restoration potential reached 0.08 volts. 6) Oxidation-and-restoration potentials of pure solutions scarcely differ from the oxidation-and-restoration potentials of solutions in which samples which have a tendency to intercrystalline corrosion are tested. There are 5 figures and 5 Soviet-bloc references.

X

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KRASNOYARSKIY, Vladimir Vasil'yevich; LARIONOV, Anatoliy Konstantinovich; KLIMOV, I.Ya., red.; CHEKRYZHOV, V.A., red.izd-va; KHENOKH, F.M., tekhn. red.

[Underground corrosion of metals and ways to control it] Podzemnaia korroziia metallov i metody bor'by s nei. Moskva, Izd-vo M-va kommun. khoz.RSFSR, 1962. 215 p. (MIRA 16:3)
(Corrosion and anticorrosives) (Soil corrosion)

KLIMOV, I.Ya., doktor tekhn. nauk, prof., red.; UDYMA, P.G., inzh. red.; RYZHOVA, L.P., inzh., red. izd-va; EL'KIND, V.D., tekhn. red.

[Use of polymers in anticorrosion techniques] Primenenie polimerov v antikorrozionnoi tekhnike. Pod red. I.IA.Klinova i P.G.Udyma. Moskva, Mashgiz, 1962. 318 p. (MIRA 15:8)
(Corrosion and anticorrosives) (Polymers)

S/852/62/000/000/006/020
B136/B101

AUTHORS: Neugodov, P. P., Klinov, I. Ya.

TITLE: Cold casting of apparatus and chemical equipment made of plastics filled with graphite

SOURCE: Primeneniye polimerov v antikorrozionnoy tekhnike. Ed. by I. Ya. Klinov and P. G. Udyma. Moscow, Mashgiz, 1962. Vses. sovet nauchno-tekhn. obshchestv., 48-55

TEXT: The new casting materials НЛ(NL) with ВИАМ-Б (VIAM-B) resin, 2ФНЛ (2FNL) with ФЛ-2 (FL-2) furyl resin, and 5ЭФНЛ (5EFNL) with ЭТ-5 (EP-5) epoxy resin as a binder are described. Products of complex shape and large dimensions can be made from these filled with graphite without applying pressure and at room temperature. They are stable against almost all acids and acid solutions except strong oxidants, also against most non-oxidizing acids, basic salts and solvents, and below 30°C withstanding even nitric acid, chromic acid, and free oxygen. The material 5EFNL resists acids, bases, and petroleum products, and remains practically unaffected by organic solvents, alcohols, and hydrocarbons. The products

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Cold casting of apparatus and chemical ... S/852/62/000/000/006/020
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made from these materials include: (1) stopcocks and straight-way cocks (40 - 150 mm . diameter) designed for pressures up to 30 at and temperatures up to 160°C; (2) heat exchangers made of NL plastic, for various processes in the chemical industry; and (3) centrifugal pumps, absorption columns, mixers, etc. Electrode graphite dust is applied as a filler; p-chlorobenzosulfonic acid, aniline hydrochloride, phenyl methylane sulfochloride or heel from destillation of hexamethylene tetramine are applied as hardeners. The compression strength is 700 - 900 kg/cm^2 for NL; 550kg/cm^2 for 2 FNL, and 1000-1100 kg/cm^2 for 5EFNL. The cost for small-scale production of chemical equipment from NL plastic varies from 50 to 70 kopecks per kg at a price of 30 kopecks for the raw material. There is 1 table.

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S/191/62/000/002/003/008
B110/B101

AUTHORS: Bokshitskiy, M. N., Kagan, D. F., Klinov, I. Ya.

TITLE: Thermoplastic pressure piping. Communication I. Mechanical strength of pipes

PERIODICAL: Plasticheskiye massy, no. 2, 1962, 38 - 44

TEXT: In this paper, the mechanical strength of pipes under a static load is estimated. To determine the relations among time, tension, and temperature, the durability curves are divided into two linear sections: (a) a flat one and (b) a steep one separated by the point of inflection. In (a), plastic destruction occurs with uniform deformation of the whole specimen as long as the wall thickness remains unchanged. Swelling spreads radially and axially, and intensive orientation and fracture in the destruction zone occur at a right angle to the pipe axis. Deformation in highly elastic PE (especially high-pressure PE) is largely reversible. In (b), brittle destruction occurs due to cracking and partial, highly elastic deformation. $\tau = B \cdot \exp[(U_0 - \gamma)/kT]$ is valid with U_0 being the

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Thermoplastic pressure piping... S/191/62/000/002/003/008
B110/B101

energy constant of destruction dependent on the material properties (in metals it corresponds to the sublimation energy), γ being a structure-sensitive constant depending on orientation, working methods, etc., and B being a constant dependent on temperature and stress. The coordinates of the "brittle point" are: $x_h = (b_h - b_p)/(k_p - k_h)$; $y_h = (k_p b_h - k_h b_p)/(k_p - k_h)$, where b_p and b_h are the strengths in plastic and brittle destruction at T_1, k_p and k_h are the temperature-dependent constants. $\sigma_h = B\tau_h^n$ with B being C'/C_1^n and $n = \lambda'/\lambda$ is derived for the instantaneous strength in brittle destruction which thus depends only on stress. Plastic destruction occurs with $\sigma > \sigma_h$, and brittle destruction in praxis occurs at $\sigma < \sigma_h$. The boundary values of stress and durability which correspond to the brittle transition, are determined from

$$\tau_h = C \cdot e^{-\lambda \cdot T_1}$$

$$C = \left(\frac{A_h}{A_p}\right)^{\frac{1}{k_p - k_h}} \text{ и } \lambda = \frac{a_p - a_h}{k_p - k_h} \qquad (8)$$ and

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Thermoplastic pressure piping...

$$\sigma_h = C' \cdot e^{-\lambda' T_i}$$

$$C' = \left(\frac{A_h^{k_p}}{A_p^{k_h}}\right)^{\frac{1}{k_p - k_h}} \quad \text{и} \quad \lambda = \frac{k_h \alpha_p - k_p \alpha_h}{k_p - k_h}. \qquad (9).$$

A_p, α_p, A_h, α_h are constants depending on the loading rate. The time dependence of strength $\sigma = A\tau^{-n} \cdot e^{-\alpha T}$ with A, n, and α being empirical constants, also holds for PE pipes with constant, linear characteristics. The authors (Author's Certificate no. 130225 of September 3, 1959, Vestnik tekhniko-ekonom. inform. NIITEKhIM, no. 5, 14 (1960)) studied Soviet PVC, high-pressure ЛЭ-500 (LE-500) PE (of the Okhtinskiy khimicheskiy kombinat (Okhta Chemical Combine)) and low-pressure PE (of the NIIPM) by the pin and cone methods. In relaxation tests, only brittle fracture was observed independent of deformation. It usually started on the external surface at a right angle to the stress direction, with a parabolic destruction front. The velocity of the "avalanche crack" increases linearly with time. High-pressure PE is sensitive to

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Thermoplastic pressure piping...

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stress concentrators. The initial embryonic crack has a smooth surface characteristic of brittle fractures. On further propagation of the "avalanche crack" from the point of stress concentration, the fracture surface becomes rough due to retarding elasticity. Low-pressure PE usually breaks in the center section with a smooth surface; its durability is lower than that of high-pressure PE. A 1.5 - 2% deformation is assumed to be comparatively safe. Ring-shaped PVC microsamples of the Vladimirskiy khimicheskiy zavod (Vladimir Chemical Plant) were examined in various media at 20 - 80°C. A steep initial drop in stress is characteristic of PE relaxation curves. The propagation velocity of the "avalanche crack" increases with time and temperature up to 40 - 45°C. At 55 - 60°C, however, high elasticity predominates. A temperature rise from 20° to 100°C reduces the strength of high-pressure PE to 1/9; the strength of low-pressure PE is reduced by 50% due to a temperature rise from 20° to 60°C. There are 9 figures and 17 references: 11 Soviet and 6 non-Soviet. The three references to English-language publications read as follows: L. F. Sansone, SPE Journal, No. 5, 418 (1959); ASTM-Bulletin, No. 12, 25 (1956); A. A. Griffith, Phil. Trans. Roy. Soc., 221, 163 (1921).

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S/282/63/000/001/001/011
A059/A126

AUTHORS: Klinov, I.Ya., Vorob'yeva, M.A.

TITLE: The resistance to corrosion of some alloyed steels and titanium under the conditions of synthetic acetic acid production

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk, 47. Khimicheskoye i kholodil'noye mashinostroyeniye, no. 1, 1963, 2, abstract 1.47. 4 (Vestn. tekhn. i ekon. inform. N.-i. in-t tekhn. ekon. issled. Gos. kom-ta Sov. Min. SSSR po khimii, no. 5, 1962, 41 - 44)

TEXT: The results are given of tests which have been performed under conditions resembling those found in operations on chrome, chrome-nickel, chrome-nickel-molybdenum, and chrome-molybdenum steels of the grades Х25Т (Kh25T), Х17Т (Kh17T), 1Х18Н9Т (1Kh18N9T), 0Х21Н5Т (0Kh21N5T), 1Х18Н12М2Т (1Kh18N12M2T), 1Х18Н12М3Т (1Kh18N12M3T), 0Х21Н6М2Т (0Kh21N6M2T), Х27Н4М1Т (Kh27N4M1T), Х17М2Т (Kh17M2T), Х25М2Т (Kh25M2T), and also on commercial titanium ВТ-1 (VT-1). Sheet steel, seamless tubes with untreated and turned surfaces, respectively, and also sheet steel samples having a welded

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joint were tested. The pipes were first heated to 700°C for 1 h and then cooled down in the air. Welding of the Kh17M2T steel was performed in argon atmosphere using a strip of the same steel as filler material. Commercial titatium VT-1 was also tested in the form of sheets, tubes and welded samples. From the test results it can be concluded that low-nickel steels, chrome-nickel steel 0Kh21N5T, and chrome-nickel-molybdenum steel 0Kh21N6M2T and Kh27N4M1T are corroded in solutions of acetic acids and a mixture of the oxidation products of n-butane to the same extent as the currently used steels 1Kh18N9T and Kh18N12M2T. Hence, under the conditions given, 0Kh21N5T grade-steel can be used instead of 1Kh18N9T, and 0Kh21N6M2T and Kh27N4M1T grade-steels instead of 1Kh18N12M2T. Chrome-molybdenum steel Kh17M2T is less resistant to the mixture mentioned containing more than 3% of formic acid at 140°C. Commercial-grade titanium VT-1 in a mixture of the oxidation products of n-butane containing up to 10% of formic acid at 140 and 160°C is not subjected to corrosion at all.

[Abstracter's note: Complete translation]

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S/1 4/62/000/006/005/006
D040/D112

AUTHORS: Moskvicheva, A.F., Engineer; Zaretskiy, Ye.M., Candidate of Technical Sciences; Klinov, I.Ya., Professor, Doctor of Technical Sciences

TITLE: Corrosion of Kh17 type steels in acetic acid

PERIODICAL: Khimicheskoye mashinostroyeniye, no.6, 1962, 23-26

TEXT: Nickel-free and low-nickel chromium steels Х17 (Kh17), Х17Н (Kh17N), Х17Н2 (Kh17N2) and Х17Н5 (Kh17N5) were tested for corrosion in order to find whether they could replace 1Х18Н9Т (1Kh18N9T) steel with 6-9.5% Ni for making acetic-acid containers. Rolled sheet steel specimens were tested at 30°C in 15 to 98% solutions of acetic acid in water; the tests included measurements of electric potential. The article includes a detailed description of the experiments and graphs of the obtained data, as well as the chemical compositions of all tested steels, including 1Kh18N9T.

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KLINOV, I.Ya., doktor tekhn.nauk; VOROB'YEVA, M.A.

Behavior of some plastic materials under conditions of the production of synthetic acetic acid by n-butane oxidation. Khim.prom. no.10:769-772 O '62. (MIRA 15:12)

(Plastics—Testing)
(Acetic acid) (Butane)

S/191/62/000/011/010/019
B101/B186

AUTHORS: Shevchenko, A. A., Klinov, I. Ya.

TITLE: Fatigue strength of glass plastics under the action of an aggressive medium and of temperature

PERIODICAL: Plasticheskiye massy, no. 11, 1962, 41-43

TEXT: An apparatus (Fig. 1) for testing the fatigue strength of glass plastics under the action of aggressive solutions and at elevated temperatures is described. ЭФ-32-301 (EF-32-301) epoxy phenol glass textolite (I) and glass textolite based on ПН-1 (PN-1) polyester resin (II) filled with T_1 (T_1) glass fabric were tested. Results: (1) In 20% NaOH, at 650 kg/cm^2 stress (15% of the tensile strength) and at room temperature, the strength of I decreased by 60% after 5000 hrs. Without stress, but after 1000 hrs at 50°C, 800 hrs at 20°C, the strength dropped by 65% in this solution. (2) In 30% H_2SO_4, the durability of I at 90°C was only 1/32 of the durability at 50°C, but the durability-versus-stress curves in this acid were similar for both these temperatures. At room temperature,

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43461

8/191/62/000/012/013/015
B101/B186

15 8060

AUTHORS: Bokshitskaya, N. A., Klinov, I. Ya.

TITLE: Behavior of stressed polyethylene in some aggressive media

PERIODICAL: Plasticheskiye massy, no. 12, 1962, 58-62

TEXT: Samples of ПЭ-150 (PE-150) high-pressure polyethylene and П (P) low-pressure polyethylene were immersed in a vessel containing an aggressive medium, kept at a definite temperature (20-80°C) and subjected to tensile stress by a lever and weights. The deformation of the sample and the change in tensile strength due to the medium and stress were measured. The apparatus enabled 36 samples to be tested simultaneously. The strength of polyethylene was found to be unaffected by exposure at room temperature in unloaded state to the action of 10 or 40% NaOH for 240 hrs, of 10, 30 or 80% H_2SO_4 for 480 hrs, and of 10 or 30% HCl for 1000 hrs. The tensile strength was not changed in high-pressure polyethylene loaded at room temperature with 39, 52, and 65 kg/cm^2 for 1920 hrs in 1, 10, 20 or 30% NaOH. The same holds for low-pressure

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Behavior of stressed polyethylene ... S/191/62/000/012/013/015
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polyethylene loaded under otherwise equal conditions to 83.4, 111.2, or 139 kg/cm^2. At 60°C, however, the tensile strength of high-pressure polyethylene soon dropped from 130 to 50 kg/cm^2 and that of low-pressure polyethylene from 260 to 120 kg/cm^2. Long-period tests on low-pressure polyethylene loaded with 84, 72, 60 or 48 kg/cm^2 and on high-pressure polyethylene loaded with 40, 35, 30 and 25 kg/cm^2 showed that the logarithm of the elongation (%) is a linear function of the logarithm of time, and hence the creep rate an exponential function of the stress. 10-13% NaOH proved particularly aggressive. At 60°C and with a stress of 60 kg/cm^2 the endurance of low-pressure ethylene was only ~30 hrs in 10% NaOH as against, 150 hrs in 30% NaOH. There are 6 figures.

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S/153/62/005/003/004/004
E111/E452

AUTHORS: Rastrepin, V.N., Klinov, I.Ya.

TITLE: Corrosion of constructional carbon steel in the production of activated carbon

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Khimiya i khimicheskaya tekhnologiya, v.5, no.3, 1962, 509-513

TEXT: The authors studied the corrosion of waste-gas lines in a carbon black plant with wet additional trapping of carbon black. The study was made to fill a gap in the research of corrosion of equipment in carbon black plants. Corrosion experiments were carried out at 35°C on steel no.3 in waste gas (13.7 to 17.2% CO, 4.9 to 5.2% CO_2, 2.5 to 3.5% O_2, 10.0 to 13.0% H_2, 0.8 to 1.8 g/m^3 H_2S, 0.6 to 1.13 g/m^3 CS_2) saturated with water and containing variable quantities of carbon and carbon pulp. The methods of weight loss and plotting of polarization curves previously described by V.N.Rastrepin were used. The authors conclude that the high rates of corrosion in waste-gas lines in plants are due primarily to the presence of carbon, which intensifies both cathodic and anodic processes. The action of

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UDYMA, Petr Grigor'yevich; SAGALAYEV, G.V., red.; BAKLANOV, N.A., red.;
BAYTIN, I.A., red.; KLIMOV, I.Ya., red.; LABUTIN, A.L., red.;
TREBUKOV, P.D., red.; VEKSER, A.A., red.; SHPAK, Ye.G.,
tekhn.red.

[Corrosion-resistant pipelines made of nonmetallic materials]
Korrozionnostoikie truboprovody iz nemetallicheskikh materialov. Moskva, Goskhimizdat, 1963. 219 p. (Korroziia v khimicheskikh proizvodstvakh i sposoby zashchity, no.20)
(MIRA 16:8)
(Pipelines--Corrosion) (Nonmetallic materials--Corrosion)

ALEKSEYEV, S.N.; ANTIPIN, V.A.; ARTAMONOV, V.S.; BALALAYEV, G.A., inzh.; VOLODIN, V.Ye.; GOL'DENBERG, N.L.; GORINA, B.S.; GOFEN, D.A.; GRISHIN, M.Ye.; DERESHKEVICH, Yu.V.; DORONENKOV, I.M.; KLINOV, I.Ya., doktor tekhn. nauk, prof.; LEYRIKH, V.E.; LUTOHIN, N.V.; MOLOKANOV, A.V., dots.; NOGIN, A.Ya.; PAKHOMOV, N.M.; PROTOSAVITSKAYA, Ye.A.; ROMOV, I.V.; CHAPLITSKIY, L.A.; TSEYTLIN, A.G.; STRAV'YE, P.K.; MOSHCHANSKIY, N.A., doktor tekhn. nauk, prof., red.; PEREVALYUK, M.V., red.izd-va; TEMKINA, Ye.L., tekhn.red.

[Corrosion protection in the construction of industrial buildings] Zashchita ot korrozii v promyshlennom stroitel'stve. Moskva, Gosstroiizdat, 1963. 406 p. (MIRA 16:12)

(Corrosion and anticorrosives)
(Industrial buildings)

AM4020387 BOOK EXPLOITATION s/

Klinov, I. Ya.; Lavin, A. N.

Plastics in the chemical-engineering industry (Plastmassy v khimicheskom mashinostroyenii) Moscow, Mashgiz, 1963. 214 p. illus., biblio., append. 7500 copies printed. Reviewer: Olenev, B. A.; Editor: Preobrazhenskiy, A. Ya.; Editor of the publishing house: Ryzhova, Managing editor: Rybakova, V. I.; Technical editors: Denkina, N. F., Gordeyeva, L. P.; Proofreader: L. P.; Piryazev, P. A.

TOPIC TAGS: plastics, chemical industry, phenolformaldehyde, silicone polymers, furyl resins, epoxide resins, glass textolites, polyvinyl chloride, vinyl plastic, polyethylene, polypropylene, fluoroethylenes, chloroethylenes, vinyl asbestos, graphites

PURPOSE AND COVERAGE: This book is intended for engineers and technicians in planning organizations and plants in the chemical-engineering and the chemical industries. It may be of use also for students in engineering and machine-design vuses. The book contains interesting and practical information concerning

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plastics and their properties and application in the chemical-engineering industry both as independent structural materials and as protective coatings. Characteristic structural apparatuses and parts made of plastics are described, and methods are given for designing apparatuses made of familiar plastics (vinyl, faolite, etc.). G. Z. Vashin assisted the authors in writing Chapter VI, and Chapter XIII was written by A. V. Molchanov and A. N. Levin.

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Card 2/8

KLIMOV, I.Ya.; KNYAZEV, V.K.; ALEKSAKHIN, N.P.

Research work on chemically stable paint materials for use in the atomic power industry; literary review. Lakeras. mat. i ikh prim. no.3:46-49 '63. (MIRA 16:9)
(Atomic power industry—Equipment and supplies)
(Protective coatings)

ACCESSION NR: AP4041686 S/0153/64/007/002/0327/0334

TITLE: Effect of different factors on the corrosion rate of stainless steels in acetic acid solutions.

AUTHOR: Vorob'yeva, M. A., Klinov, I. Ya.

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 7, no. 2, 1964, 327-334

TOPIC TAGS: stainless steel, corrosion, acetic acid corrosion, aeration, acetic formic acid corrosion, electrochemical behavior, activation passivation, chromium nickel steel, chromium nickel molybdenum steel, anodic polarization, cathodic polarization, corrosion resistance

ABSTRACT: The effects were studied of aerating and of admixing up to 10% formic acid on the rate of corrosion and the electrochemical behavior of Cr-Ni and Cr-Ni-Mo steels (1Kh18N9T, 1KhN12M2T, 0Kh21N5T and 0Kh21N6M2T) in 60, 80 and 90% acetic acids at 18, 60 and 90C. The anodic and cathodic polarization and the rate of corrosion in Cr-Ni steels in 60 and 90% acetic acid at 18 and 60C was affected

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ACCESSION NR: AP4041686

little by the admixture of up to 5% formic acid; the rate of corrosion of the Cr-Ni steels was insignificant under these conditions. At 90C the admixture of formic acid retarded the anodic polarization of the investigated steels in 60 and 90% acetic acid with the anodic polarization of the Cr-Ni steels being hampered more by an increase in formic acid content than the anodic polarization of the Cr-Ni-Mo steels. The Cr-Ni and Cr-Ni-Mo steels were polarised more readily and their rate of corrosion was less upon application of anodic current in aerated acetic acid solutions containing formic acid than in unaerated solutions of the same concentration. All the steels investigated were converted to the active state in unaerated acetic acid solutions containing admixtures of formic acid after treatment with cathodic current; the Cr-Ni-Mo steels were activated in solutions containing higher formic acid content. The Cr-Ni steels 1Kh18N9T and 0Kh21N5T do not withstand the action of 60 and 90% acetic acids with formic acid at 90C or boiling temperature. The corrosion resistance of the Cr-Ni-Mo steels is not sufficient at 90C in unaerated 60 and 90% acetic acid solutions containing 3% formic acid. Orig. art. has: 3 figures and 2 tables

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ACCESSION NR: AP4041686

ASSOCIATION: Kafedra korrozii khimicheskoy apparatury, Moskovskiy institut khimicheskogo mashinostroyeniya (Department of Corrosion of Chemical Apparatus, Moscow Institute of Chemical Machinery Construction)

SUBMITTED: 10May63 ENCL: 00 OTHER: 004

SUB CODE: MM, GC NR REF SOV: 003

Card 3/3

L 51981-65 EWT(m)/EPF(c)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b) MJW/JD/HW/WB

33
32
B+1

ACCESSION NR: AT5012201 UR/3078/64/028.000/0021/0037

AUTHOR: Moskvicheva, A. F.; Zaretskiy, Ye. M.; Klinov, I. Ya. (Doctor of technical sciences, Professor)

TITLE: Electrochemical and corrosion characteristics of low-nickel stainless steels in acetic acid solutions

SOURCE: Moscow. Institut khimicheskogo mashinostroyeniya. Trudy, v. 28, 1964, Korroziya khimicheskoy apparatury (Corrosion of chemical apparatus), 21-37

TOPIC TAGS: stainless steel corrosion, low nickel steel, steel electrochemical property, acetic acid, anode polarization, austenitic steel, steel passivation / Kh17 steel

ABSTRACT: The following brands of steel were investigated: Kh17, OKh17T, Kh17D, Kh17N, 1Kh17N2, Kh17N2D, Kh17N3, Kh17N5G9AB, and Kh18N9T. The anodic and cathodic behavior was studied potentiostatically in aerated 15, 30, 50, 70, and 98% acetic acid solutions. Corrosion was studied by means of the passivation currents: the lowest anodic current in the passive region of the polarization curves was observed in the austenitic steels Kh17N5G9AB and Kh18N9T, and this agrees with the lowest corrosion rate displayed by these two steels. The highest current in the passive region was measured in the case of steel Kh17N5 in the annealed state.

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L 51981-65

ACCESSION NR: AT5012201

The anodic polarization curves of all the steels at potentials from +900 to +1000 mv display an increase in current density (different [illegible] steels) which corresponds to a change from the passive state to the [illegible] transpassivation. [illegible] passivity was observed at potentials of 1100 [illegible] mv. The kinetics of steady-state potentials of the steels are discussed. [illegible] of the acetic acid solutions causes the steady-state potential of the steels to shift toward the negative side. Orig. art. has: 11 figures, 6 tables, and 5 formulas.

ASSOCIATION: Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Institute of Chemical Machine Building)

SUBMITTED: 00

ENCL: 00

SUB CODE: MM

NO REF SOV: 010

OTHER: 009

mle

Card 2/2

~~L 41290-65~~ EWT(m)/EPF(n)-2/EWT(m)/EWP(t)/EWP(b)/EWA(d)/EWP(v) Pu-4
IJP(c) WW/MJW/JD/JG/WB

ACCESSION NR: AT5012202 UR/3078/64/028/000/0055/0069

AUTHOR: Vorob'yeva, M. A.; Klinov, I. Ya. (Doctor of technical sciences, Professor)

TITLE: Study of the corrosion of various alloys in fatty acids

SOURCE: Moscow. Institut khimicheskogo mashinostroyeniya. Trudy, v. 28, 1964. Korroziya khimicheskoy apparatury (Corrosion of chemical apparatus), 55-67

TOPIC TAGS: stainless steel corrosion, titanium corrosion, tantalum corrosion, zirconium corrosion, molybdenum steel, fatty acid, formic acid, acetic acid, chromium steel, nickel steel

ABSTRACT: The article reports the results of studies on the corrosion resistance of various stainless steels and technical titanium VT-1 in formic, acetic, propionic and butyric acid and their mixtures, and in mixtures of higher fatty acids C_5-C_9, C_{10}-C_{16}, C_{17}-C_{21} at 220 to 310C. The effect of temperature, aeration, and admixtures of formic acids on the corrosion and electrochemical behavior of chromium-nickel and chromium-nickel-molybdenum steels in acetic acid solutions was also studied. The steels tested were Kh18N10T, Kh17N13M2T, 0Kh21N5T, and 0Kh21N6M2T. Up to 280C, the Cr-Ni-Mo steels Kh17N13M2T and

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L 51996-65

ACCESSION NR: AT5012202

2

OKh21N6M2T were stable in the higher fatty acids, but at 300-310C, pitting corrosion was observed. The corrosion rate of the Cr-Ni steels Kh18N10T and [illegible] was much greater in these acids, but VT-1 was highly corrosion-resistant. The effect of various concentrations and temperatures on the corrosion rate is described. Tantalum and zirconium were found to have a high corrosion resistance to boiling solutions of 50 and 85% formic acid. Orig. art. has: 8 figures and 1 table.

ASSOCIATION: Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Institute of Chemical Machine Building)

SUBMITTED: 00 ENCL: 00 SUB CODE: MM, GC

NO REF SOV: 000 OTHER: 000

Card 2/2

L 51994-65 EPF(c)/EPT(m)/EWP(s)/EWP(b)/EWA(d)/EWP(t) MJW/JD/WB
ACCESSION NR: AT5012204
UR/3078/64/028/000/0087/0090

23
22
B+1

AUTHOR: Kochergina, D. G.; Klinov, I. Ya. (Doctor of technical sciences, Professor); Levin, I. A.

TITLE: Determination of the structural component responsible for the tendency of ferrite-austenitic steels toward intercrystalline corrosion

SOURCE: Moscow. Institut khimicheskogo mashinostroyeniya. Trudy, v. 28, 1964. Korroziya khimicheskoy apparatury (Corrosion of chemical apparatus), 87-90

TOPIC TAG: steel corrosion, ferritic steel, austenitic steel, intercrystalline corrosion, biphasic alloy

ABSTRACT: A technique was developed to determine the grains along the boundaries of which intercrystalline corrosion occurred in two-phase ferritic-austenitic steels. The samples were etched in potassium ferricyanide, which colors the ferrite but not the austenite grains, and photographed. This technique [illegible] tendency toward intercrystalline corrosion [illegible] free [illegible] steels appears primarily along the [illegible] ferrite [illegible]. This is observed in Kh21N5 and Kh21N6M2 steels after rapid cooling from a high temperature. Additional heating of these steels at 450-850C causes the loss of corrosion resistance between the ferrite grains as well.

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ACCESSION NR: AT5012204

Hence, in these two types of steel, the ferrite component is responsible for the appearance of the tendency toward intercrystalline corrosion. The processes causing this tendency take place faster at the boundaries of the ferrite grains than at those of the austenite grains. The technique is applicable to other ferrite-austenitic steels, and in principle to other two-phase alloys. Orig. art. has: 4 figures.

ASSOCIATION: Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Institute of Chemical Machine Building)

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NO REF SOV: 000 OTHER: 000

BJ

Card 2/2

L 51993-65 EPF(c)/EWP(b)/EPR/EWP(t)/EWT(m)/EWA(d)/EWP(t) Ps-4 IJP(c)
WJW/JD/WB

ACCESSION NR: AT5012206 UR/3078/64/028/000/0117/0126 41 40

AUTHOR: Cherepakhova, G. L.; Klinov, I. Ya. (Doctor of technical sciences, Professor); Shreyder, A. V. B+1

TITLE: Corrosion resistance of aluminum alloys in petrochemical condensation-cooling equipment. Corrosion in cooling waters 27

SOURCE: Moscow. Institut khimicheskogo mashinostroyeniya. Trudy, v. 28, 1964. Korroziya khimicheskoy apparatury (Corrosion of chemical apparatus), 117-126

TOPIC TAGS: aluminum alloy, aluminum corrosion, alloy corrosion resistance, refrigerating equipment, magnesium alloy, manganese alloy, brass corrosion, carbon steel corrosion

ABSTRACT: The purpose of this work was to establish the optimum composition and properties of aluminum alloys to be used as materials for condensation-cooling equipment operating with recirculated cooling water. The corrosion resistance of the following materials was studied in water stimulating the composition of industrial recirculating water: technical aluminum Al; aluminum-magnesium alloys AMg, AMg3, AMg5V, AMg6; the aluminum-manganese alloy AMts, and, to compare the corrosion resistance, brasses LO 70-1, LA 77-2, and carbon steel 10. The

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ACCESSION NR: AT5012206

electrochemical characteristics of these alloys in circulating fresh and sea water and the influence of pH changes and stirring on the corrosion were determined. It was shown that the aluminum-magnesium alloys were sufficiently corrosion resistant in circulating cooling waters up to 70C and could be used for condenser tubes (AMg), grids (AMg5V or AMg6), and partitions (AMg), in the cooling of nonaggressive products. Orig. art. has: 6 figures and 3 tables.

ASSOCIATION: Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Institute of Chemical Machine Building)

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ENCL: 00

SUB CODE: MM, OC

NO REF SOV: 000

OTHER: 000

Card 2/2

L 52125-65 EPF(c)/EPR/EWA(b)/EWP(j)/EWP(k)/EWT(d)/EWT(m)/T/EWA(1)/EWP(v)/ [illegible] Pr-4/Ps-4/Peb EM/WW/RM

ACCESSION NR: AT5012207 UR/3078/64/028/000/0132/0150

41

AUTHOR: Bokshitskiy, M. N.; Klinov, I. Ya. (Doctor of technical sciences, Professor)

TITLE: Influence of the type of stress on the mechanical strength of polyethylene

SOURCE: Moscow. Institut khimicheskogo mashinostroyeniya. Trudy, v. 28, 1964. Korroziya khimicheskoy apparatury (Corrosion of chemical apparatus), 132-150

TOPIC TAGS: polyethylene, polymer corrosion, polymer strength, polymer stress, polyethylene embrittlement

ABSTRACT: On the basis of a theoretical analysis, the article gives recommendations for the design of supporting structures made of polyethylene. The discussion consists of three sections: (1) Failure under unidirectional extension, (2) failure under a combination of stresses, and (3) failure of a tube loaded with an additional axial force. A combination of stresses was found to have a specific influence on the mechanical strength of polyethylene, accelerating the onset of the period of brittle failure. Using model considerations, the authors obtain theoretical equations for the "line of brittleness." These equations are in good agreement with the experimental data. Results of calculations show that an

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